MAR 22 1922

SCHOOL AND SOCIETY

EDITED BY
J. McKEEN CATTELL, W. CARSON RYAN, JR., AND RAYMOND WALTERS

Volume XV | SATURDAY, MARCH 18, 1922 | Number 377

CONTENTS

How Much Education Have the American People? (I): LEE BYRNE 289
The New Mathematics of the Schools: DAVID EUGENE SMITH 292
The Value of Intelligence Tests in Universities: J. W. BRIDGES 295
Educational Events:
New Appropriations of the General Education Board; The Mid-West Illiteracy Conference; Education of Teachers in Different States; Progress of the "Work-Study-Play" Plan of School Organization; The Fifth Annual Physical Education Conference 303
Educational Notes and News 306
Special Correspondence:
An Experiment in Faculty Participation in Administration: LESTER W. BOARDMAN 308
Discussion:
Schools and the Public Library: JAMES N. RULE 310
Educational Research and Statistics:
The South Dakota Group Intelligence Test for High Schools: WILLIAM H. BATSON 311
Reports:
A System of Control of Public Schools in the District of Columbia 315

$5.00 A YEAR | PUBLISHED WEEKLY | 15 CENTS A COPY

THE SCIENCE PRESS

UTICA, N. Y.—11 Liberty Street AND GARRISON, N. Y.
GRAND CENTRAL TERMINAL, NEW YORK CITY

Entered as second-class matter November 9, 1921, at the Post Office at Utica, N. Y., under the Act of March 3, 1879.

Announcing

New Texts for Commercial Teaching

PRACTICAL BUSINESS ARITHMETIC

By HELEN J. KIGGEN, *Practical Arts High School, Boston, Mass.*

Designed primarily for use in commercial classes in high schools and in continuation school classes.

FRENCH COMMERCIAL CORRESPONDENCE

By LOUIS J. FISH, *Director of Commercial Work in Boston Schools.*

Contains essential directions for correspondence with many illustrations of letters and exercises in writing letters. A very complete commercial vocabulary.

PROGRESSIVE TYPEWRITING

By HARRY F. ADMIRE, *Brown's Business College, Bloomington, Illinois.*

A very carefully organized book designed for beginners.

THE EXPERT TYPIST

By CLARENCE C. SMITH, *Census Bureau, Department of Commerce, Washington, D. C.*

Presupposes an elementary knowledge of typewriting. Designed to train the student in the more difficult forms of typewriting.

ACTUAL BUSINESS ENGLISH

Exercise Book to Accompany Actual Business English

By P. H. DEFFENDAL, *Brown's Business College, St. Louis, Mo.*

These books are designed to drill the student in the practical use of English. Much attention is given to the correct forms for practice.

PRACTICE IN CITIZENSHIP

By R. L. ASHLEY, *Pasadena, California.*

A discussion of citizenship from the standpoint of the home, the school, the vocation, and society. The correlation of rights and duties are strongly emphasized.

SEND FOR OUR COMPLETE CATALOGUE

THE MACMILLAN COMPANY

New York Boston Atlanta Dallas Chicago San Francisco

SCHOOL AND SOCIETY

Volume XV SATURDAY, MARCH 18, 1922 Number 377

HOW MUCH EDUCATION HAVE THE AMERICAN PEOPLE?

I.

GROSSLY erroneous ideas as to the extent to which the American people continue their education into the upper years of the public school system appear to be widely prevalent. Intelligent citizens very commonly entertain the notion that the great bulk of pupils are found in elementary schools and that only a negligible proportion "survive" to the high school grades. This fallacy is probably due in large part to misinterpretation and vague quoting of statistics. As an example turn to a standard book in teaching method[1] and the very first sentence reads: "About one per cent. of our population has a formal education beyond the age of 14." This would mean that only about one per cent. of the people are getting any high school education. Yet, at the date when this book was published (1909), we find on examination that the proportion of persons receiving at least first year high school instruction must have been in reality about 23 per cent.

Moreover, careful students of education in some instances present the facts in what appears to the writer to be an unduly unfavorably light. For example Superintendent Spaulding says,[2] "As a nation we are barely sixth graders! That is, the highest grade that we complete, on an average, is the sixth." And his statement is substantiated by such calculations as those made by the United States Bureau of Education[3] which show that the average number of days of school attended by each person who became 21 years of age in 1918 was 1,076, which, reduced to years of 200 days each, amounts to 5.38 years. This presentation of the case is a little severe, for it is rather generally held that 36 weeks constitute an acceptable year, which would mean 180 days, less holidays. Moreover, 100 per cent. attendance is not to be expected in any year and pupils do in general succeed in one grade and pass on to the next without necessarily having attended every single day of the session.

This article attempts to prepare an answer to the question propounded in the title, and in doing so breaks the general topic up into certain more specific questions, viz.:

(1) *How much education are the present school children receiving?*

(2) *How much education have the present adult or out-of-school population?* and

(3) *How much education was received by the parents of the present generation of school children?* The situation of fifty years ago is also brought in for purposes of comparison.

The method employed in this article is to ascertain the enrollment for each of the grades, either as actually enumerated or as estimated, and to measure this against the total population of a single year of age as deduced from figures of the U. S. Bureau

[1] Farnsworth, *Education through Music.*

[2] Spaulding, *Educate America*, Headquarters American E. F. University, Bulletin 96, page 12.

[3] U. S. Bureau of Education Bulletin, 1920, No. 31, "Statistical Survey of Education, 1917-1918," page 9.

of the Census. For example, the total first year high school enrollment is measured by the total population 15 years of age, because no matter how the ages vary in the first year of high school the maximum theoretical number to be enrolled could not be expected to exceed the total number of persons of a single year of age. The concluding note states more in detail the sources of information and the methods of their use.

How much education are the present school children receiving? The latest public school enrollments available are those reported by the U. S. Bureau of Education for the year 1918. For this year, when we compare the grade enrollments with the appropriate age populations, we find that the enrollments for each of the first five grades equals or exceeds 100 per cent. of the age population, excess over 100 per cent. being due presumably to repetition of the grade on the part of a portion of the pupils. Above the fifth grade we find the following proportions:

RATIO OF ENROLLMENTS TO AGE POPULATIONS, 1918

Age	Est. Population	Grade	1918 Enrollment	P.C. which Enrollment is of Age Pop.
12	2,105,066	6	1,940,042	92.1
13	1,999,813	7	1,575,084	78.8
14	1,999,813	8	1,440,625	72.0
15	1,999,813	H.S. I	717,958	35.9
16	1,999,813	H.S. II	485,253	24.2
17	1,999,813	H.S. III	339,136	16.9
18	1,999,813	H.S. IV	261,567	13.7

This would seem to indicate that the median rate of educational attainment now is not sixth grade but well beyond eighth grade, without being, however, as advanced as the first year of high school. The proportion attaining sixth grade education is over 90 per cent., seventh grade nearly 80 per cent., and eighth grade over 70 per cent. About 36 per cent. receive some high school education; 24 per cent. go about half way through high school, and those getting about four years of high school education amount to 14 per cent. The number of *graduates* is, of course, somewhat less than the number of fourth year pupils.

The figures given above are for the whole United States. This article will not attempt to discuss the variations between different localities, which, of course, are serious. However, a comparison with similar estimates for certain representative large cities may be of interest. For this purpose as a median city is selected (as regards proportions passing into upper grades) Toledo, and as a maximum city in this respect, Seattle.[4]

RATIOS OF ENROLLMENT TO AGE POPULATION, 1918

Grade	United States	Median City	Maximum City
6	92.1	71.4	92.1
7	72.8	64.2	86.0
8	72.0	46.9	82.2
H.S. I	35.9	36.1	72.5
H.S. II	24.2	34.9	42.7
H.S. III	16.9	19.2	32.4
H.S. IV	13.7	14.4	24.5

From this it appears that a median large city would show an appreciably larger proportion in each year of high school than the nation as a whole, while a maximum city would show about twice as many in every year of high school, reaching 70 per cent. for "some" high school education, more than 40 per cent. for "half way" through high school, and about 25 per cent. for four years of high school. For a maximum city the median amount of education being received now, instead of merely being beyond the eighth grade, would be approximately the second year of high school.

[4] See Byrne, "High School Enrollments in Large Cities," *American School Board Journal*, March, 1921, page 27.

It is possible that Portland had higher proportions than Seattle. The exact figures by years of age and by grade are known for Seattle but were not secured from Portland.

Although Seattle, quoted as maximum city above, had a second year high school enrollment only 43 per cent. as large as the age population, the Dallas white high schools reached a proportion of over 50 per cent. in 1921, showing that a median education of second year high school has been not merely approximated but actually passed in some large cities. The Dallas (white) proportions of age population in the last seven grades in 1921 were respectively 92.8, 81.4, 84.0, 69.5, 50.2, 34.1, and 21.8, the second year high school per cent. being 50.2.

How much education have the present adult or out-of-school population? An examination of the statistics of ages in the reports of the Bureau of the Census indicates that the average age of persons from 15 years old upward is about 32 1-3 years. A person 32 years old in 1922 would have been 14 in 1904. Hence, to answer the question of the average amount of education of our adult or out-of-school people we may investigate the ratios of enrollment to age population in 1904. Above the fifth grade we find the following proportions:

RATIO OF ENROLLMENTS TO AGE POPULATIONS, 1904

Age	Est. Population	Grade	1904 Enrollment	P.C. which Enrollment is of Age Pop.
12	1,624,824	6	1,296,479	79.8
13	1,543,583	7	1,093,416	70.8
14	1,543,583	8	827,872	53.6
15	1,543,583	H.S. I	329,689	21.3
16	1,543,583	H.S. II	201,066	13.0
17	1,543,583	H.S. III	127,884	8.3
18	1,543,583	H.S. IV	80,574	5.2

The median attainment for this date is still beyond the eighth grade, but only about half as large a proportion went to high school as go at the present time. The proportions were for "some" high school about 20 per cent., "half way" through high school 13 per cent., and four years of high school five per cent. These figures then represent the educational status of our present citizenry, while the larger 1918 figures give the status of the young generation who are on the point of joining its ranks.

The interval between the average amount of education of the adult population and the greater amount of education being received by the present generation of school pupils has some bearing on the use of sociological criteria in determining curriculum content. Evidently a standard based directly on the proficiency of adults in a given knowledge or skill is not necessarily as high a standard as the schools might be justified in setting up, inasmuch as the present school pupils are extending their education farther all along the line.

How much education have the parents of the present generation of school children? The answer is interesting as showing how much more education parents are purchasing for their children than they themselves received, and also as a measure of the social progress from one generation to the next. From an examination of the statistics of ages the writer has estimated that the average parent of a 14 year old child is 46½ years old; this average parent would have been 14 in 1890. Investigating the ratios of enrollment to age population for 1890 we find, above the fifth grade, the following proportions:

RATIO OF ENROLLMENTS TO AGE POPULATIONS, 1890

Age	Est. Population	Grade	1890 Enrollment	P.C. which Enrollment is of Age Pop.
12	1,252,445	6	976,530	77.9
13	1,189,822	7	813,775	68.4
14	1,189,822	8	600,941	50.5
15	1,189,822	H.S. I	136,733	11.5
16	1,189,822	H.S. II	81,325	6.8
17	1,189,822	H.S. III	50,344	4.2
18	1,189,822	H.S. IV	29,491	2.4

Even the children of 1890 could fairly claim to be eighth graders, at least 50 per cent. reaching that point. However the high school proportions are in each year only about half as large as in 1904 and not much over a fourth as large as in 1918. Less than 12 per cent. received "any" high school education, less than seven per cent. went "half way" through and less than two and one half per cent. had four years. About four times as many parents are giving their children high school education as received any themselves.

Conditions of fifty years ago. The U. S. Bureau of Education was founded in 1867. It is possible to estimate similar proportions as early as the year 1870:

RATIO OF ENROLLMENTS TO AGE POPULATION, 1870

Age	Est. Population	Grade	1870 Enrollment	P.C. which Enrollment is of Age Pop.
12	771,167	6	529,721	68.6
13	732,609	7	441,434	60.2
14	732,609	8	325,982	44.5
15	732,609	H.S. I	36,824	5.0
16	732,609	H.S. II	21,901	2.9
17	732,609	H.S. III	13,558	1.8
18	732,609	H.S. IV	7,942	1.0

By this criterion the children of 1870 were seventh graders. Only five per cent. received "any" high school education, only three per cent. went "half way," and only one per cent. had four years. In 50 years the *proportions* have been multiplied by eight, the absolute numbers by much more than eight because the population of the United States is now much greater (more than two and one half times the population in 1870).

Summary of our educational status at different dates. The ratios already indicated may be assembled as follows, (with further addition of ratios for universities and colleges):

RATIOS OF ENROLLMENT TO AGE POPULATION AT DIFFERENT DATES

Grade	U. S. 1870	U. S. 1890	U. S. 1904	U. S. 1918	Median City 1918	Maximum City 1918
6	68.6	77.9	79.8	92.1	71.4	92.1
7	60.2	68.4	70.8	78.8	64.2	86.0
8	44.5	50.5	53.6	72.0	46.9	82.2
H.S. I	5.0	11.5	21.3	35.9	36.1	72.5
H.S. II	2.9	6.8	13.0	24.2	34.9	42.7
H.S. III	1.8	4.2	8.3	16.9	19.2	32.4
H.S. IV	1.0	2.4	5.2	13.7	14.4	24.5
College	.....	1.1	1.1	3.5	.....	.....

It would seem that we should recognize a marked social advance in our country since 50 years ago, when we note that five per cent. of the people then secured "some" high school education and now 35 per cent., three per cent. then went "half way" through high school and now 24 per cent., one per cent. then had four years of high school work and now 14 per cent. A larger proportion get college education now then got high school education in 1870.

Lee Byrne

Dallas Public Schools,
Dallas, Texas

(To be concluded)

THE NEW MATHEMATICS OF THE SCHOOLS

The mere suggestion of a new type of mathematics in the high school may seem to rank in the same class of projects as the squaring of the circle or the disintegration of the atom,—desirable but not possible. Since three and two are five, and since the square on the hypotenuse is still equivalent to the sum of the squares on the other sides, and since mathematics is the science of all sciences in being the same yesterday, today, and forever, we naturally question the possibility of any change in its eternal truths.

The manifest reply to such a question is that the term "new mathematics" is a relative one; that no mathematics is positively

new, being merely an ancient secret at last revealed; and that, moreover, the term is merely an abbreviation for some such expression as "a different selection of mathematical material, differently arranged, and taught for a different purpose from the one which formerly prevailed in the schools."

That a movement is in progress in the schools to make this new selection of material, to arrange it upon a different plan, and to teach it for a different purpose is one of the features of the present educational unrest; it is no more radical than the changes in the teaching of the other arts and sciences, of letters, of the social needs of communities, and even of ethics and morals; and it is no more open to danger to sound education than any of the reforms that continually influence the progress of the world.

The genesis of the movement is, as in all such cases, hard to determine. It may have been in the work of a commission appointed by the International Mathematical Congress, held at Rome in 1908,—a commission that made the first great world survey of the teaching of any of the common branches of learning. This movement resulted in showing that the United States was about two years behind the other leading countries in the mathematical attainments of its selected class of pupils at the end of the twelfth school year. On the other hand the movement may have been due to the combined efforts of numerous national, state, or urban committees that thereafter investigated the causes for this unfortunate condition. It is quite certain, however, that the influence that brought the reform prominently before the American schools was the National Committee on Mathematical Requirements, appointed by the Mathematical Association of America, financially supported by the General Education Board, and commanding the active support of the various organizations of teachers of mathematics all over the country.

This Committee has completed its report after four years of work, and the conclusions to which it has arrived may be said to represent the opinion of the leaders among the scholars and the teachers engaged in this field of activity.

Briefly stated, the most important results achieved, including only those which have general interest, are as follows:

1. The schools should eliminate the non-essentials in arithmetic, thus allowing pupils to acquire proficiency in ordinary calculation by the end of the sixth school year. This is done in other countries and it is also done in our better class of public schools in this country.

2. In the seventh, eighth, and ninth school years pupils should acquire such knowledge of mathematics as the average, well-educated citizen needs to possess for purposes of general information, being allowed, in case of necessity, to substitute for this work such courses in technical mathematics (say for the machine-shop) as circumstances seem to require.

3. This range of mathematics for general information should first include the generally usable part of intuitive geometry, comprising a knowledge of the most common geometric figures, and the ability to make such simple measures as the average citizen is likely to require. It should next include those parts of algebra that he is quite sure to need, particularly the simple formulas used in measuring and in elementary commercial rules, the familiar graphs of statistics, the meaning of the negative number, and the practical applications of the simple equation. It should then reveal to the pupil, in a few lessons, the meaning of trigonometry, both for its

value in machine work and other applied lines and for its still greater value in showing the basic principles of those measurements in space which show us our position in the universe. And finally, for the sake of general intelligence if nothing more, it should show to pupils the meaning of a geometric demonstration, and it should constantly apply mathematical processes to the present-day problems of commerce, industry, and the practical arts.

4. The Committee, always speaking for the teachers of mathematics generally, feels that mathematics is one of the few branches of learning that touch nearly all departments of human knowledge, and that it is not to be placed on the same level as certain other topics which may properly find some kind of place in the curriculum. Its importance is such that the schools should require every pupil to take the above general offering, extending through the ninth school year.

5. In the tenth, eleventh, and twelfth school years the pupil should be allowed to elect as much work in mathematics as he wishes, the range of election being reasonably limited by the ability of the schools to establish classes. If he is preparing for commercial life, he should be allowed to specialize in commercial mathematics even as far as a college student can now do by the end of his sophomore year. If he is anticipating a career in industrial lines, he should be allowed to specialize in the line of machine-shop mathematics, for example, proceeding as far as the school can afford to allow. If he is looking forward to research work in mathematics in the university, he should be allowed to anticipate much of his college work, at least through the elements of the calculus, before he leaves the high school, just as he is allowed to do in all the leading European countries.

6. The Committee recommends that the best possible offering be given for each school year, so that, if a pupil leaves at the close of the seventh grade, he will have learned something more than arithmetic; that, if he leaves at the end of the eighth grade, he will have had that part of algebra and intuitive geometry that the average citizen needs to know; and that, if he leaves at the end of the ninth grade, he will have had something besides the conventional and rather mechanical algebra heretofore taught in that year.

7. The Committee takes no stand, however, in favor of any unscientific mixing of unrelated parts of mathematics, or in favor of the lowering of any standards of scholarship. It seeks to offer in the required field a general survey of the elementary part of the subject, thereby assuring every citizen of some knowledge of the meaning of mathematics, and particularly of the type that he will probably need to use, either in his vocation or in his general reading. It then seeks to allow the pupil to follow the courses to which he seems the best suited, placing the mathematics upon the highest plane possible for the selected group that desires to enter the field.

A more significant movement has never been made in this country with respect to the subject of mathematics, and it is to be hoped that the results will show, within the next decade, that our country is no longer behind others in its achievements in this line of work in the secondary schools and colleges, but rather that it is in the lead in its careful selection and arrangement of the subject matter to be taught.

David Eugene Smith

Teachers College,
Columbia University,
New York City.

THE VALUE OF INTELLIGENCE TESTS IN UNIVERSITIES[1]

PSYCHOLOGY as well as other sciences benefited by the World War. The impetus given to the development of methods of measuring intelligence by the work of psychologists in the United States Army continued without abatement after the signing of the armistice. The methods used in the army and their results are well known and need not detain us here. It is interesting to note, however, that elaborate plans were made for the examination and classification of the personnel of the Students' Army Training Corps that had been organized in the various universities of the country. The Army Group Intelligence Tests were to be a part of this program. Very few of these corps were actually examined, for the signing of the armistice put an end to the great plan.

When in due time the psychologists returned to their former positions in the colleges and universities, they naturally carried with them the "boosting habit" acquired in the army and proceeded to organize propaganda to "sell psychology" to their respective colleagues and administrative officers. The latter, being also under the spell of the army, in many cases yielded to the suggestion, and thus originated the epidemic of "intelligence tests for college students," to which, in the course of the last three years, many universities have succumbed. The result has been a considerable expenditure of money, time, and energy. Are there any compensating advantages? It behooves us now to consider this question critically as scientists, and not merely as psychologists working in the interest of our subject, our department in the university, or our purely personal gains.

The opinion of psychologists in some of the leading universities of America may be indicated by the results of a questionnaire sent out in 1920 by Dean G. F. Arps of the College of Education, Ohio State University, and summarized by the writer as follows:

Letters sent out, 70; answers received, 42.

Question 1: Have group intelligence tests been given to students in your university? *Answers:* yes, 31 cases; no, 5 cases; not generally, 3 cases; no answer to this question, 1 case.

Question 2: (a) What tests were used? *Answers:* Alpha, 21 cases; Thurstone, 7 cases; Thorndike, 7 cases; Otis, 5 cases; specially devised, 5 cases.

(b) What fraction of the student body was examined? *Answers:* total, 3 cases; Freshmen, 17 cases; psychology students, 6 cases; engineers, 2 cases; unselected groups, 2 cases.

Question 3: What uses have actually been made of the results of the tests? *Answers:* for correlations and other research, 17 cases; for illustration in instruction in psychology courses, 5 cases; in dealing with delinquent and probation students, 6 cases; supplementary for entrance, 4 cases; as a basis for educational advice, 2 cases; as a basis for vocational advice, 3 cases; as a basis for admission of students (Columbia), 1 case; by scholarship committees, 1 case; in the interpretation of students' academic grades, 1 case; to show the amount and kind of improvement during the college course, 1 case; in classifying groups for teaching, 1 case.

Question 4: What do you consider the proper functions of these tests in colleges and universities? *Answers:* supplemen-

[1] Paper read before the Psychology Section of the American Association for the Advancement of Science, Toronto, December, 1921.

tary for entrance, 14 cases; in classifying groups for teaching, 9 cases; in dealing with delinquent and probation students, 6 cases; as a basis for educational advice, to determine hours of work, selection of courses, etc., 4 cases; as a basis for vocational advice, 3 cases; by scholarship committees, 3 cases; remains to be seen, 5 cases.

It will be noted that, in most cases, there is considerable difference between the actual uses of the tests in the various universities and the functions which the psychologists claim they should perform. For the most part the tests actually furnish data for psychological or rather psychostatistical studies, and indirectly serve the perhaps not unimportant purpose of keeping psychology before the reading public. On the other hand, the psychologists believe that the tests can be used in the universities in solving or helping to solve some important administrative and educational problems.

The most important of the functions ascribed to these tests in universities are the following:

1. Determining the amount of work which certain student should be permitted to carry.

2. Solving the problems connected with probationary and morally delinquent students.

3. Giving vocational advice to students, and recommending for academic and industrial positions.

4. Admitting to the university students who have not satisfied the conventional entrance requirements. Intelligence tests may be substituted for or may be supplementary to the usual entrance requirements.

5. Classifying students for instructional purposes into groups of approximately equal ability. The superior students could thus progress faster, and the inferior students could be given more careful instruction.

In making these claims for the intelligence tests it is assumed that the intelligence ratings will give a high correlation with actual achievement either in the university or in the business of life after leaving the university. The former assumption is involved in most of the values claimed for the tests, but the latter is implied in the matter of vocational advice. However, since this is referred to in only three of the replies, it may be considered relatively unimportant as far as the universities are concerned. At any rate the correlation of intelligence test scores with success in life after graduating has not yet been determined, and no valid conclusion can be expected early, since the older problem of the relation of academic achievement to such success is still a matter of controversy.

Considerable data have, however, been accumulated on the more important assumption—for universities—of the correlation between intelligence test scores and academic grades. The problem, reduced to its simplest terms and very briefly stated, is this:

Are the scores made on an intelligence test a fair and reliable indication of the students' future academic grades?

Does an order of merit ranking of the students on the basis of the intelligence test correspond to a similar ranking on the basis of marks made in courses?

Can academic achievement be predicted from ratings made on intelligence tests? All the above mentioned values of the tests in universities are subsidiary to this assumed prognostic value. Can this assumption be justified?

In a paper[2] read before the American

[2] *Journal of Educational Psychology*, October, 1921.

Psychological Association in December, 1920, the writer reported correlations between academic standing and scores on the Army Alpha tests. In the case of two hundred senior students selected at random from a class of over seven hundred, the coefficient of correlation between the total score on the test and the average of the academic marks for three years was approximately $.35 \pm .04$, where perfect correlations is represented by 1.00 and purely chance relationship by zero. Now every statistician knows that this means much less than the figures would seem to indicate. It does not of course mean about one third of a perfect relationship or that the relationship would be perfect in every third case. The betting odds against a prediction based on such a correlation would be much nearer those indicated by chance than the above statement would imply. Perhaps, if investigators were required to defend their statements and predilections in race track fashion, they would learn to attach much less significance to such low correlations. Just how high a correlation must be in order to have significance is a matter of considerable difference of opinion. It no doubt depends upon the nature of the problem. In this connection the writer has been informed by a first rate statistician and industrial psychologist, Mr. Herbert M. Toops, that in the selection of employees in industry the results of tests for vocational aptitude must give a correlation of over .75 or .80 with actual achievement before said tests begin to be of financial assistance to the employers, that is to say, before the tests have any advantage over the present methods of selecting employees. This statistician was optimistic enough to believe that such tests could be devised, but it is clear that a great deal remains to be done before they will attain this degree of accuracy.

In the paper previously referred to correlations were also reported between academic grades and scores on each sub-test of the Alpha examinations. In the case of the two hundred senior students these were as follows:

TEST	CORRELATION
1. Directions	$.18 \pm .05$
2. Arithmetic	$.22 \pm .05$
3. Practical judgment	$.17 \pm .05$
4. Synonym-antonym	$.27 \pm .04$
5. Disarranged sentences	$.27 \pm .04$
6. No. series completion	$.34 \pm .04$
7. Analogies	$.37 \pm .04$
8. Information	$.31 \pm .04$

On the basis of these and other findings that we have not space to report, it was suggested that a revision and adaptation of the Alpha test would improve the prognostic value of the examination.

Such a revision was undertaken. All the changes made cannot be indicated here; but the following were the most important: elimination of test 1, substitution of the Otis proverbs test for test 3, addition of a reasoning test adapted from Thorndike's Columbia test and from Colvin's Brown University test. The correlation between scores on this *revised* Alpha test and the average academic marks for three years' work in the case of 651 senior students was calculated and a coefficient of $.38 \pm .02$ obtained. Coefficients were also obtained for the sub-tests as before with the following results:

TEST	CORRELATION
1. Arithmetic	$.26 \pm .02$
2. Proverbs	$.27 \pm .02$
3. Synonym-antonym	$.37 \pm .02$
4. Disarranged sentences	$.30 \pm .02$
5. No. series completion	$.15 \pm .03$
6. Reasoning	$.16 \pm .03$
7. Analogies	$.32 \pm .02$
8. Information	$.23 \pm .03$

It will be observed that the prognostic

value of the revised Alpha test is little if any greater than that of the original examination. These results agree fairly well with the correlations reported by other investigators in the case of the Alpha Examination. Colvin[3] reports correlations as high as .45, Burt and Arps[4] obtain correlations from .19 to .39 for different groups, Anderson[5] reports .38 in the case of Yale freshmen, and Van Wagenen[6] for students in the University of Minnesota finds a relationship indicated by coefficients from .13 to .39.

The prognostic value of intelligence test ratings may also be indicated by a comparison of the percentage distribution of these ratings for students who have failed academically or have been placed on probation with the distribution of ratings for the total student body. These distributions in five classes for students in Ohio State University are given below. Class I means the highest five per cent. of the total university population; class II, the next 20 per cent.; class III, the middle 50 per cent.; class IV, the next 20 per cent.; and class V, the lowest five per cent.

	V	IV	III	II	I	Total
Total university	5.0	20.0	50.0	20.0	5.0	5,950
Probationary students	11.6	28.4	44.7	13.6	1.7	588

The students on probation are thus fairly representative of the entire university as far as ratings on the intelligence test are concerned. To be sure, the median score of probation students is somewhat lower than for the entire university and twice as many are in class V; but, on the other hand, 60 per cent. of these students rate average or superior on the test. The intelligence test, therefore, does not eliminate those most likely to fail in their college work. If, on the basis of the test, class V students were eliminated, we would thereby eliminate less than 12 per cent. of probationers; and we have data to show that at the same time we would eliminate many students who do average or superior academic work.

This conclusion is in agreement with the following statement made by Van Wagenen after a detailed discussion of the relation between the rankings of students on the Army tests and their rankings according to academic success: "It would seem that the tests prove least useful just where reliable results from their use is most needed; namely, in eliminating those most likely to fail in their college work and in selecting for special groups those who are most likely to attain the higher degrees of success."

It will of course be claimed that other intelligence tests give better results than the Army Alpha or its adaptations. In Ohio State University the Thurstone intelligence test was given to engineering freshmen, and it was found to give a lower correlation with grades for the first semester than the Alpha examination gave for the same group. Both were under .40.

Thorndike's Columbia University tests might be expected to give a much higher correlation with academic grades than any other intelligence test, since they are more comprehensive and contain many questions on subjects of a purely academic character such as algebra, physics, history, etc. No comprehensive or final results on this mat-

[3] S. S. Colvin, Psychological Tests at Brown University, SCHOOL AND SOCIETY, 10, 27-30, 1919.

[4] H. E. Burt and G. F. Arps, Correlation of Army Alpha Intelligence Test with Academic Grades in High Schools and Military Academies, *Journal of Applied Psychology*, 4, 289-293, 1920.

[5] J. E. Anderson, Intelligence Tests of Yale Freshmen, SCHOOL AND SOCIETY, 11, 417-420, 1920.

[6] M. J. Van Wagenen, Some Results and Inferences Derived from the Use of Army Tests at the University of Minnesota, *Journal of Applied Psychology*, 4, 59-72, 1920.

ter are as yet available; the writer can, therefore, report only some rather inadequate results he has been able to derive from data furnished by Professor E. A. Bott, University of Toronto. These data consist of scores on the Thorndike tests (four papers), matriculation marks, and first year marks for 67 freshmen in the University of Toronto. The number of cases are slightly different for each correlation. These are as follows:

Thorndike tests and matriculation marks	$.37 \pm .07$
Thorndike tests and first year marks	$.40 \pm .07$
Thorndike tests and average of matriculation and first year marks	$.48 \pm .07$
Matriculation marks and first year marks	$.59 \pm .06$

On the basis of these admittedly inadequate data, we reach the following tentative conclusions: (1) The Thorndike Columbia tests are little if any better as a basis for prediction of academic achievement than other shorter examinations; and (2) matriculation marks in the University of Toronto are a better basis for such prediction than intelligence tests.

All the available data therefore point to the same conclusion, namely, that the results of intelligence tests do not line up college students in the same order, or anyway near the same order, as they are lined up by academic achievement measured by grades earned. This prognostic value of the tests is implied, as we have pointed out, in practically all the claims made in behalf of the tests by propagandists.

Whether the tests are prognostic of achievement after leaving the university is a matter upon which we have at present no information whatever, and it may be added that it is a matter in which the university as such is not primarily interested. The question at issue is whether the tests can help in solving university problems, and not whether they can help in foretelling the chances for success in life. The latter is a much more difficult question to answer, for we have no quantitative measure of a successful life, and the problem could scarcely be subjected to statistical treatment. Moreover, even if in some particular case the intelligence test foretold ultimate failure, the university would nevertheless quite rightly award the degree, if the student's academic achievement were of a high order.

But it will be said that the failure of intelligence test scores to predict academic achievement is due to the inaccuracy of academic grades or marks as measures of such achievement, for instructors do not read examination papers carefully and are often influenced by the personal qualities of their students. This is no doubt a valid objection and may account in part for the very low correlations obtained when the college marks are for only one semester or one year. The objection has less validity when the academic achievement is measured by the average grades for three years, as in the writer's study here reported. In this case the errors in grades would tend to counterbalance each other so that the result is a fairly accurate measure of actual achievement.

The objection will also be made that the absence of a high correlation between intelligence ratings and academic grades is due to the supposed fact that the grade earned in a course of study is a joint resultant of intelligence, which is adequately measured by the test, and temperamental traits that are not measured and are perhaps not measurable. If such a statement is made without any evidence, it is obvious that the objector now drops the role of a scientist and takes on the role of a special pleader for intelligence tests.

What then is the evidence? Does it amount to more than a perhaps clever guess? How do we know that some in-

telligent students do poor academic work and that some students of relatively low intelligence do good academic work? The answer to this question is likely to be that the former make high scores on the test and the latter make low scores. Thus the test is made the ultimate criterion of intelligence.

In fact, we have here a vicious circle. We wish to obtain an adequate measure of intelligence. In order to do so we must have an objective criterion with which to correlate the results of our various trial tests. This objective criterion is achievement of some sort either rated by competent judges or measured by quantitative means. On this basis a selection of tests is made. Later it is found that the scores on these tests do not correlate with some form of achievement (in this case the most important form, for it looms largest in the original criterion). It is then argued that this achievement is due to some factor other than intelligence. If this had been admitted at the beginning, what would have been the original criterion? It is clear that we here find ourselves in a serious dilemma. Either we must broaden the concept of intelligence to include all the factors that make for achievement, or we must select some other objective criterion. In dealing with children we are somewhat better off, for we have the additional independent criterion of chronological age, but a similar question presents itself, for intelligence does not include all the factors that develop with age.

The argument here presented points to an important conclusion, namely, that the concept of intelligence needs careful analysis and that the problem of its ultimate nature presses for solution. It shows how absurd it is for anyone to hold the view that the nature of intelligence is of no importance and that the only really important thing is what the intelligence tests can do. What the tests can do is very largely dependent upon what they are testing. In fact, what they can do in universities seems to rest almost entirely upon what they are testing.

A division of labor is of course legitimate, and it is thus entirely fitting that some individuals should limit themselves to the practical problem of what intelligence tests can do; but others should, by the same token, devote themselves to the more fundamental theoretical problem of what intelligence really is. There is need for much careful analytical investigation by introspective or behavioristic methods in psychological laboratories. Indeed, as is frequently the case in the progress of science, we seem to have reached a point where further progress in the practical field awaits the solution of theoretical problems.

But let us revert to the problem of the prediction of students' grades. It is no doubt true that academic achievement, like other forms of success, depends upon many factors that go to make up the total personality of the individual. There is, for example, a correlation between interest and achievement. The writer has shown that when students arrange their courses according to their interest in them, their rankings give a correlation of about .30 with the grades which they later earn in the same courses.[7]

Pressey[8] reports a correlation of .58 between the academic grade and scores on his X-O tests which are supposed to meas-

[7] J. W. Bridges and V. M. Dollinger, The Correlation between Interests and Abilities in College Courses, *Psychological Review*, 27, 308-314, 1920.

[8] S. L. Pressey, A Group Scale for Investigating the Emotions, *Journal Ab. Psychology*, 16, 55-64, 1921.

ure "total affectivity" and emotional idiosyncrasy. His study was based upon 46 cases, the academic grades were the average marks in the June examinations, and the X-O test scores were those for idiosyncrasy. From the point of view of what tests can do, it would seem that a better case might be made out for the use of these temperamental scales in universities than for the so-called intelligence tests. Perhaps other personality traits are equally important, and we thus find ourselves forced to the conclusion that, if the psychological examination of students is to be of any value for the solution of university problems, it must be a real psychological examination as distinguished from a mere intelligence test. It must, to use Allport's[9] recently proposed classification, include examination and rating of intelligence, temperament, self- expression and sociality, and, we may add, whatever other traits the total personality may be found to include. Of all these factors intelligence in the case under consideration will probably, for reasons about to be mentioned, turn out to be of least importance.

Education, as Professor Pillsbury[10] has recently pointed out, has itself a selective function. The acquisition of knowledge in any subject and the passing of an examination are themselves tests of ability. This is why the advocates of the merits of any particular course of study can always point to the results of such a course in producing eminent men. The Englishman may thus point to those who were made great by studying mathematics, the Chinaman to those made great by studying ancestry or the works of Confucius, the American to those made great by studying law, and so on. Each is right and all are wrong. The study of the subject did not make the men great; but the men who are inherently great are selected in each case by their ability to pass successfully the examinations in the course of study. The school system may thus be likened unto a series of sieves, each succeeding one having larger meshes than the last. The smallest grains in the intellectual crop fall through the first sieves in the grades, the medium drop through at the end of the public school, the larger ones at the end of high school, while only the grains of the largest calibre remain at the end of the college or professional school sieve.

In the universities we are therefore already dealing with a highly selected group, and the selection has been made very largely on the basis of intelligence or intellectual factors. This is no doubt an important reason for the special weakness of intelligence tests in universities. We have arrived at a point in the educational system where the grains (to use the above metaphor) are much more homogeneous, much more nearly the same size, and perhaps where achievement is beginning to depend relatively more upon interest and perseverence than upon purely intellectual factors. We are, moreover, in the midst of the *Sturm und Drang* period of adolescence. The intelligence tests can not now measure ability to achieve because, in the first place, other factors are now more important for achievement; and, in the second place, the tests are not sufficiently accurate to make the fine distinctions required among such a homogeneous group of relatively superior people.

It is a well known fact that intelligence tests become less and less accurate as we

[9] F. H. Allport and G. W. Allport, Personality Traits, Their Classification and Measurement, *Journal Ab. Psychology*, 16, 6-40, 1921.

[10] W. B. Pillsbury, Selection—An Unnoticed Function of Education, *Scientific Monthly*, 12, 62-74, 1921.

approach the upper levels of the scale. In the case of children up to say 14 years of age they have a surprising degree of reliability. Beyond this their reliability rapidly decreases. It was generally admitted by psychologists in the United States Army that, whereas the Alpha examination was more or less successful in rating accurately the inferior and mediocre, it was quite unable to discriminate in the higher levels between the so-called A and B men. Close to 100 per cent. of college students fall into these two classes. The defect in the intelligence scales here mentioned may be remedied in part by time and study, but it is interesting to note that the tests break down about where the age criterion fails, and the difficulty already mentioned regarding the objective criterion for the selection of tests comes up.

It will now be clear why the intelligence tests have and probably always will have their greatest value in the public schools, and in the diagnosis of mental defect. They have somewhat less validity in high schools, and the value of their general use in colleges and universities is here seriously questioned. In fact, the writer believes that he is justified in concluding from the data at hand that their general use in universities with the object of helping to solve the above mentioned administrative and educational problems is absolutely contra-indicated. The results are not only disappointing as to their usefulness, but may be actually misleading. The tests should of course be used, preferably on small groups, for purely statistical and research purposes. This has been their chief value up to date, but in dealing with university administrations the research value of the tests has usually been treated as of secondary importance. It cannot be too strongly emphasized that the above conclusion refers only to the use of intelligence tests in colleges and universities. Their value in primary and secondary schools seems to be well established, at any rate it is not here in question.

Apart from the matter of research, has psychological examination any function to perform in universities? The writer is of the opinion that a psychological examination in the broad sense, as distinguished from a mere intelligence test, may have an extremely important place. He does not believe that all students should be subjected to such an examination. In the present state of our knowledge that would be impossible, and moreover it is probably quite unnecessary, since the great majority of college students present no particular problem to the university. In the writer's opinion university administrative officers—presidents, principals, deans, heads of departments—should be educated to understand the importance of psychological and psychiatrical examination, just as they now understand and believe in physical examination, and they should be encouraged to establish the practice of referring all problem cases to the psychology or psychiatry department for examination and recommendation. A better arrangement would be to have for this purpose a special bureau upon which psychology, psychiatry and perhaps other departments of medicine would be represented. This is an object towards which, as psychologists, we can legitimately bend our energies.

If the general use of intelligence tests for college students has little or no value, the thorough psychological and psychiatrical examination of those cases that fail to come up to the established minimum academic standards, or who are in any way not adjusted to university life and its problems may have a very great value both for the university and for the student con-

cerned. For the university it may mean some assistance in the solution of a special problem; for the student it may mean not only psychologically well-founded advice, where such advice can be given, but in certain cases it may mean the detection of psychotic or psychoneurotic trends in their incipient stage, at a time when therapeutic procedure may perhaps be of some avail in freeing the subject from the direful results of a repressed complex, or in breaking through the vicious circle of his neurasthenic habits.

JAMES W. BRIDGES
UNIVERSITY OF TORONTO

EDUCATIONAL EVENTS

NEW APPROPRIATIONS OF THE GENERAL EDUCATION BOARD

THE list of outright and provisional gifts to colleges and universities just announced by the General Education Board follows the new policy of the Board, sanctioned by Mr. John D. Rockefeller, to distribute principal as well as income from its funds. The payments from principal total $1,811,666. The Board announced the election to its membership of Dr. James R. Angell and Raymond B. Fosdick.

The list of gifts announced is as follows:

Northwestern University, Evanston, Ill., toward $2,000,000, $600,000.

College of the Pacific, San Jose, Cal., toward $750,000, $250,000.

Hampden-Sidney College, Hampden-Sidney, Va., toward $325,000, $100,000.

Boston University, Boston, Mass., toward $1,500,000, $400,000.

University of Chattanooga, Chattanooga, Tenn., toward $500,000, $166,666.

Presbyterian College of South Carolina, Clinton, S. C., toward $75,000, $125,000.

Illinois Wesleyan University, Bloomington, Ill., toward $400,000, $135,000.

Lincoln University for Negroes, Chester County, Pa., toward $100,000, $35,000.

To New York University, $500,000, toward $1,500,000; for the discharge of its outstanding obligations, $500,000.

Annual grants to nineteen colleges for the increase of teachers' salaries, $199,250.

The Lincoln School, New York City, for completion of building and equipment, $153,100; for its annual budget, $140,000, making a total of $293,100.

For negro education: Supervising industrial teachers, $78,000; summer schools for teachers, $43,275; county training schools, $51,000; miscellaneous, $12,200; total for negro education, $184,475.

THE MID-WEST ILLITERACY CONFERENCE

SUGGESTING as a national slogan, "The elimination of illiteracy from the United States before 1930," the Illiteracy Conference of the Middle West and Northern States, at its meeting in Chicago February 25, advocated the limitation of immigration, increased work in Americanization, and the restriction of the ballot to persons able to read and write the English language.

The conference praised the service accomplished by Mrs. Cora Wilson Stewart, chairman of the National Illiteracy Commission, and then passed these resolutions:

We commend the National Education Association for forming the Illiteracy Commission and the plan it has adopted of holding sectional conferences. We highly appreciate the fine work of propaganda against illiteracy by the press, educational journals and magazines, daily papers, and especially the daily papers of Chicago.

As a prevention of foreign illiteracy we endorse the action of the National Congress in restricting immigration and imposing a literacy test. Since much of the native illiteracy results from defective rural education, we recommend strict compulsory laws in each state, with a county, municipal and state enforcement provision.

As a means for the removal of foreign illiteracy we endorse the fine work done by the nation and states in Americanization, and recommend an increase in this activity. As a means of removing *native* illiteracy, we recommend that each state, county, city, school district and community marshal all its social and educational forces to this end and that each state which does not now have a state commission on illiteracy establish such a commission.

That native illiterates may have an incentive equivalent to that of foreigners, and for the protection of the sacred right of franchise, we recommend that no person be permitted to vote who is unable to read and write the English language.

We also recommend the expansion of our system of evening, continuation, and special courses for the removal of illiteracy, and the training of special teachers for the field of adult teaching.

As a great national aid in this vitally important work and to increase the efficiency of our means of public education, we strongly recommend the passage of the Towner-Sterling bill in its present form.

We recommend that the Illiteracy Commission of the N. E. A. adopt as slogan: The elimination of illiteracy from the United States before 1930.

The committee presenting these resolutions was composed of the following: Mrs. E. F. Armstrong, president, Iowa Federation of Women's Clubs; George M. Condon, state senator, Michigan; Nelson Sauvain, president North Dakota State Teacher Association; S. K. Mardis (chairman), head of the department of rural education, Ohio University, Athens, Ohio.

The states included in the conference were North Dakota, South Dakota, Nebraska, Iowa, Kansas, Minnesota, Wisconsin, Indiana, Oklahoma, West Virginia, Missouri, Michigan, Ohio and Illinois.

EDUCATION OF TEACHERS IN DIFFERENT STATES

DISTRIBUTION of teachers according to educational equipment in various states as determined by the Carnegie Foundation for the Advancement of Teaching in a recent investigation was presented in statistical form at the meeting of the Society of College Teachers of Education at Chicago on March 2. Nine states have no teachers who have had less than a high school education. These are Arizona, California, Connecticut, Iowa, Idaho, New York, Oregon, Utah and Washington. Of the remaining states, Florida has 94 per cent. of her teachers holding certificates that do not require a high school education, Arkansas 87 per cent., Mississippi 76 per cent., New Mexico and Oklahoma 73 per cent. Ninety per cent. of the teachers in Connecticut, 89 per cent. of the teachers in Arizona, and 86 per cent. of the teachers in California and Massachusetts hold licenses to teach that call for at least two years of normal school or college.

In the table that follows the first number after the name of the state in each case indicates the percentage of all teachers who hold licenses which require less than a high school education. The second number indicates the percentage of teachers holding licenses requiring a high school education or more. The numbers in the third column show the percentage of teachers who hold certificates which require two years of collegiate or normal school education beyond a high school course.

Alabama	59	41	10
Arizona	0	100	89
Arkansas	87	13	12
California	0	100	86
Connecticut	0	100	90
Florida	94	6	1
Iowa	0	100	30
Idaho	0	100	42
Kansas	26	74	42
Louisiana	15	85	67
Massachusetts	7	99	86
Mississippi	76	24	4
Missouri	30	70	34
Montana	23	77	34
Nebraska	39	61	4
New Mexico	73	27	18
New York	0	100	82
North Carolina	51	49	23
Ohio	8	92	42
Oklahoma	73	27	22
Oregon	0	100	79
Pennsylvania	23	77	67
South Carolina	40	60	35
South Dakota	39	61	34
Utah	0	100	69
Vermont	6	94	29
Washington	0	100	50
West Virginia	67	33	18

PROGRESS OF THE "WORK-STUDY-PLAY" PLAN OF SCHOOL ORGANIZATION

THIRTY-TWO cities were reported to the United States Bureau of Education Conference at Chicago February 27 as operating on some form of the "work-study-play" plan of school organization. Superintendent Wm. M. Davidson, of Pittsburgh, who presided at the morning conference, announced that his community was so well satisfied with the new type of school that it would not willingly go back to the old.

The conference was devoted to practical problems of procedure under the plan. It developed that local communities were modifying the plan to suit their own needs, often renaming it. A variety of names were used in referring to it—platoon school, duplicate school, alternating plan, Gary plan, "work-study-play" plan, companion class, and extended day, were some of the terms. The cities

reporting platoon schools in operation were: Akron, Ohio; Birmingham, Ala.; Cuyahoga Falls, Ohio; Dallas, Texas; Dayton, Ohio; Denver, Colo.; Detroit, Mich.; Duluth, Minn.; Durham, N. C.; East Chicago, Ind.; Elizabeth, N. J.; Fort Smith, Ark.; Gary, Ind.; Kalamazoo, Mich.; Memphis, Tenn.; Monessen, Pa.; New Castle, Pa.; Newark, N. J.; Oakmont, Pa.; Passaic, N. J.; Pittsburgh, Pa.; Rochester, N. Y.; Rockford, Ill.; Sacramento, Calif.; St. Paul, Minn.; Seattle, Wash.; Toledo, Ohio; Troy, N. Y.; Wilmington, Del.; Warren, Ohio; Winnetka, Ill., and Youngstown, Ohio.

THE FIFTH NATIONAL PHYSICAL EDUCATION CONFERENCE

THE Fifth National Conference on Physical Education, held in Chicago February 28, brought together a group of 300 persons interested in the advancement of physical education. The meeting was called by the United States commissioner of education, J. J. Tigert, and was conducted as a joint affair with the National Council of State Departments of Education.

Dr. Willard S. Small, of the United States Bureau of Education, presided and opened the discussion. Dr. Small explained the calling of the first National Physical Education Conference at Atlantic City in February, 1918, as a means of initiating a nation-wide forward movement to extend physical education, including health training for school children as a most fundamental means of attacking the unsatisfactory conditions revealed by the draft statistics. He pointed out that, while originally called for the purpose of focusing in a united campaign the energies of all interested organizations and individuals, the conference had come to serve the additional purpose of bringing to the attention of the superintendents of education the importance and significance of physical education in the broad program of education.

Superintendent Will C. Wood, of California, followed with a discussion of the place of physical education in the broad program of public education. Superintendent Wood laid before the conference the significance of physical education as a means of character training, as well as health training; and for guidance in the right use of the rapidly increasing amount of leisure time available for the American people. He reported that in California 12 county supervisors of physical education were employed during 1921 as contrasted with none employed in 1920, and that the total expenditure from state funds for physical education had increased from $736,000 in 1920 to $866,000 in 1921.

The United States Commissioner of Education, J. J. Tigert, outlined the progress of physical education throughout the world, pointing out that 16 nations now have laws for the universal extension of physical education. Commissioner Tigert dwelt upon his own experience in athletics and stressed the significance of physical education as a means of character training. He commented upon the fact that in nations like Denmark and Sweden, where a full program of physical education has been in vogue for a number of years, the records show a relatively high average of health and normal physical development prevailing among the school children.

Mrs. Ira Couch Wood, director of Elizabeth McCormick Memorial Child Welfare Association, urged more adequate attention for the training of school children in healthful habits with reference to nourishment, rest, etc., and deplored a tendency in some quarters to regard physical education activities as a cure-all for physical deficiency.

The final address of the conference was by E. Dana Caulkins, manager of the National Physical Education Service. Mr. Caulkins, who is organizing the nation wide campaign for state and federal legislation for physical education, reported 28 states now having physical education laws effective in greater or less degree. He pointed out that the increase in appropriations and the application of physical education laws during the past four years has been rapid, but that as yet not more than one tenth of the children of the nation are receiving anything like adequate physical education, including health training. He declared that only through national cooperation with the states can there be any early hope of the realization of universal physical education

in the United States. Attention was called to the fact that legislation is now pending in Congress which would initiate the program of national stimulation for physical education. Reference was also made to the fact that leaders in both of the major political parties stressed the importance of universal physical education during the presidential campaigns of 1920.

Following the program the conference voted unanimously to request the United States Commissioner of Education and the officers of the National Council of State Departments of Education to arrange for a similar joint conference at the next meeting of the Department of Superintendence of the National Education Association.

EDUCATIONAL NOTES AND NEWS

W. F. Webster has been chosen superintendent of schools of Minneapolis, Minn., to succeed B. B. Jackson, whose contract has been terminated by the board of education. Mr. Webster has been serving as acting superintendent recently.

Mary Ross Potter, dean of women at Northwestern University, was elected president of the National Association of Deans of Women at their ninth annual session, which was held in Chicago on February 23-25.

Dr. William F. Russell, dean of the College of Education of the University of Iowa, has returned after several months in China as a member of the China Education Commission of the Foreign Missionary Conference of North America. This commission made a study of public and mission schools in China.

Ernest T. Cameron, of Mount Pleasant, Michigan, is the newly appointed executive secretary of the Michigan State Teachers' Association.

Dr. Charles W. Flint will be inaugurated as the new chancellor of Syracuse University on June 15, succeeding Dr. James R. Day.

After twenty years of active and successful work, Myra B. Jordan, dean of women, University of Michigan, has handed in her resignation to the Board of Regents. She is planning to leave Ann Arbor the last of July with her husband, for a European tour, spending next winter in Rome.

Miss Agnes Macphail, of South Grey, Ontario, who was recently elected as the first woman member of the Canadian Parliament, was a school teacher for 15 years before going into politics last fall.

Dr. Harlow Shapley has been elected to the Paine Professorship of Practical Astronomy in Harvard University, which had been vacant since the death of Professor Edward C. Pickering in 1919. Dr. Shapley studied at the University of Missouri and at Princeton and in 1914 became a member of the Mount Wilson Observatory staff. He was appointed director of the Harvard College Observatory last fall.

Professor W. E. Hocking, of the department of philosophy, and Professor Alfred W. Tozzer, of the department of anthropology, of Harvard University, have been appointed Harvard exchange professors to the Western colleges for 1923. Professor Hocking will lecture at Carleton, Beloit and Grinnell Colleges; Professor Tozzer, at Knox, Colorado and Pomona Colleges.

Dr. John Casper Branner, the second president of Leland Stanford Jr. University, died on March 1, aged 72 years.

Professor Francis M. Austin, for twenty years the head of the Latin department at Illinois Wesleyan University, died on February 4.

Dr. George Harris, president emeritus of Amherst College, died at New York on March 1. He was 78 years old. Dr. Harris was president of Amherst from 1899-1912.

Dr. B. F. Simonson, head of the department of mathematics of Upper Iowa University, died on February 27 at his home in Fayette, Iowa.

The University of Chattanooga is asking for $750,000 in its development program.

Baker University, the first college on Kansas soil, held a special celebration on February 12 of the sixty-fourth anniversary of its founding.

DR. WILLISTON WALKER, provost of Yale University and professor of ecclesiastical history in the Yale Divinity School, died at New Haven on March 9, of heart disease. He was 62 years of age.

IT is announced that a joint campaign for $1,600,000 in aid of Dickinson College, of Carlisle, Pa., and Pennington Seminary, of Pennington, N. J., will soon be started. Both are under the control of the Methodist Episcopal Church.

IN an address before Baltimore alumni on March 9, Acting Provost Josiah H. Penniman, of the University of Pennsylvania, said that the trustees have commissioned him to organize a committee for a $10,000,000 endowment drive. This organization will not await the coming of General Leonard Wood, who has been elected as head of the university, but will begin at once.

THE General Education Board, of New York, has made a provisional appropriation of $600,000 to Northwestern University for increase of faculty salaries; the stipulation is that the university shall raise $1,400,000. President Walter Dill Scott states that the board action was "the result of an investigation made of Northwestern University by the board covering a period of several years. Northwestern University is a member of the Association of American Universities but receives no state aid and has less endowment and holds more real estate than any of the endowed institutions of that association. All gifts received by the university in the seventy years of its existence amount to approximately $6,000,000 and the present assets of the university are $12,000,000."

ANNOUNCEMENT of the award of prizes totaling $20,000 in cash to a group of Iowa educators for the production of a moral code and methods of moral instruction in schools has been announced. Those receiving the prizes were Prof. E. D. Starbuck, of the University of Iowa ($4,000); H. E. Blackmar, Ottumwa, President C. P. Colgrove, Fayette, Professor F. D. Cran, Cedar Falls, Professor Ernest Horn, University of Iowa, ex-Superintendent H. F. Hukill, Waterloo, Professor Herbert Martin, Des Moines, and Professor J. D. Stirps, Grinnell ($2,000 each).

MINNESOTA Schoolmen's Week, conducted by the University of Minnesota in cooperation with the Minnesota State Department of Education, will be held at Minneapolis April 11-15.

THE registrars of colleges in Maryland have organized a conference, with W. M. Hillegeist, of the University of Maryland, as chairman, with power to call two meetings a year. The conference is to work in connection with the American Association of Collegiate Registrars.

A COMMITTEE of the Presbyterian Church, Synod of Washington, has called for an organization of religious, fraternal, political and labor organizations to establish Bible teaching as a part of the course of study in public schools of the State of Washington. The first meeting is to be held in Seattle sometime in the next two months.

IN reply to the protests of Amish bishops of Geuga County, Ohio, against the provisions of the compulsory education law, Vernon M. Riegel, head of the Ohio State Department of Education, recently gave the ultimatum, "Amish children must attend schools in Ohio." The Amish are a religious sect tracing origin to the Mennonites of Sweden, from whom they withdrew in 1620. Many members of the sect in America are progressive in education. Some of the "Old Amish" are opposed to schools for their children on the ground that it "separates their interests from the farms."

THE Department of Public Instruction of Michigan has announced that it is now organized to furnish active supervision for private, denominational and parochial schools, as required by a law passed last year. A clearing house has been established in the office of the superintendent of public instruction to which all matters regarding private, denominational and parochial schools are referred, and Mr. Floyd Rowe has been designated as the person to have charge of the routine and clerical work made necessary by the new law. Describing the new work and a recent conference of private and denominational school offi-

cials about it, State Superintendent Thomas E. Johnson says in *Moderator-Topics:* "It should be emphasized that the attitude of the Department of Public Instruction toward this new and difficult problem is one of helpful assistance. The supervisory heads of the private, denominational and parochial schools could not help being impressed with the thought that the wish of the entire Department of Public Instruction is that equality of educational opportunity for all children of the state be maintained."

THE thirty-first annual meeting of the Harvard Teachers' Association will be held at Cambridge, Mass., April 29. The work of the educational foundations will be the topic of discussion.

ACCORDING to a Manila cable dispatch to the Philadelphia *Public Ledger,* the general fund of the Philippine government is so low that many teachers have not been paid since January. All work on public projects has stopped. Wholesale closing of the public schools is said to be possible unless the government obtains financial relief.

EXTENSION divisions in state universities in the following fifteen states are cooperating with the United States Bureau of Education in the management of the government's home reading courses: Arizona, Colorado, Indiana, Iowa, Kentucky, Louisiana, North Carolina, North Dakota, Oregon, South Carolina, South Dakota, Utah, Virginia, Washington, Wisconsin. A conference on the reading courses has been called by the commissioner of education to meet at Lexington, Kentucky, on April 22.

FROM 1914 to 1920 enrollment in foreign languages decreased 37 per cent. in the schools of Minnesota, according to a note furnished to the *Minnesota Teacher* by Professor Samuel Kroesch, of the University of Minnesota. For modern language alone the loss was 50 per cent., Latin showing an increase. The change is largely due to the dropping of German. In 1914 there were 198 high schools teaching German and 11,565 students enrolled in the subject; in 1920 there were 5 high schools teaching German and a total of 120 students enrolled. In 91 high schools a foreign language (usually German) was dropped without adding another language to take its place. The modern language enrollment was 36 per cent. of the total high school enrollment in 1914, but only 18 per cent. in 1920.

SPECIAL CORRESPONDENCE

AN EXPERIMENT IN FACULTY PARTICIPATION IN ADMINISTRATION

IN November, 1921, President John S. Crabbe of Colorado State Teachers' College proposed a plan of faculty participation in formulating and administering the educational policies of the college. This plan was received with enthusiasm by the faculty and valuable results are already evident in such outcomes as *esprit de corps* and vigorous efforts toward professionalizing all the work of the college. Meanwhile the whole faculty is busy on the preliminary work necessary to the realization of its new privileges.

The faculty organization for carrying out the Greeley plan consists of the faculty council, the standing faculty committees, special faculty committees, the faculty meeting, departmental meetings, and self-surveys.

The faculty council is made up of the president and the dean of the college as ex-officio members and of five faculty members, one elected by the student council and four by the faculty. The president, who acts as chairman, calls the council into conference for discussion of the broad educational policies of the college. "Untrammeled discussion is sought that the president may have the points of view of both faculty and students."

The standing faculty committees are selected by a standing committee on committees, which is created in the same way as the faculty council, but with a different elected personnel. The duties of this committee are to determine what faculty committees shall exist, to approve the functions of these committees, to designate the membership of committees, and to promote cooperation among committees.

For the present year the following committees are to operate: Major committees, (1)

course of study; (2) research; (3) survey; (4) physical education; (5) extension service; (6) teachers' bureau; (7) alumni; (8) admission and credits; (9) official publications; (10) assembly. Fourteen minor committees will deal with such matters as text books, visual education, faculty club, religious organizations, federal aid, museum, scholarships, Boy Scouts (in training school), special loan funds, college calendar, receptions to students, dormitories and club houses, artists' series and Estes Park outings. In addition to these standing committees special committees are appointed on occasion for specific purposes.

Committee work is a stated contractual obligation of all members of the faculty, to be undertaken in addition to the regular teaching load. The results of the activities of committees are to be made available to all interested persons and to the faculty in general. The consistent functioning of these groups is vital to the routine of the college and to its educational progress. Permanent records are kept in order that the proceedings of committees may serve as guides and information at all times. Annual reports are reviewed by the committee on committees, and those of permanent or general value are published by the committee on official publications. It is worth noting that student government is operating successfully in Colorado State Teachers' College and that the committees of the student organization cooperate with the related faculty committees.

Faculty meetings at Greeley function "to unify the faculty, to ascertain discoverable educational programs among the faculty, and to discuss fully and freely local college problems and procedure." In order to avoid waste of time in extempore speeches on miscellaneous topics, calendar subjects only are considered. "Current business and significant reports of progress from standing or special committees are always on the calendar." A regular program for the year's meetings is provided, with typed copies for all faculty members.

Departmental meetings consider the matters peculiar to their subjects, provide for cooperation with other departments and with related committees, and in particular this year are considering means of thoroughly professionalizing their subject matter and methods of teaching. Heads of departments regard their chairs rather as benches, as Dean Cross says, on which all members of the departments sit and discuss policies on equal terms.

Self-surveys have been closely associated with the name of Colorado State Teachers' College since the publication in 1920 of the results of the first self-survey of that institution. The reaction to the searching investigation of the Survey Committee headed by Professor E. D. Randolph, has been a remarkable vivifying of the college. The president and the faculty believe that "a college with a forward-facing program must constantly keep surveying itself and that one survey begins when another ends." Consequently the survey committee is undertaking new investigations for the further benefit of the college.

Where does the president of the college belong in this scheme of administrative control? President Crabbe suggests his function thus: "It is obvious to me that if the president has 'directed' the agencies of the proposed administrative plan in a tactful and sympathetic way, 90 per cent. to 100 per cent. of all constructive policies of the college have been initiated by the faculty, and that at least 95 per cent. of all recommendations of the faculty have had the cordial approval of the president. Any president may wisely refuse to approve measures that are hastily or unintelligently considered or that are inspired by selfishness, greed, personal prejudice, or antagonism."

The outcome of this experiment will furnish valuable information to all teacher training institutions. Manifestly the plan will not work where the faculty is an "unorganized mob." It is hoped, however, that Colorado Teachers' College may justify the words of Dr. W. C. Bagley when he visited the college. "The establishment of this principle will do more to stabilize educational policies and insure their thorough going efficacy than any other single step that could be taken."

LESTER W. BOARDMAN
COLORADO TEACHERS COLLEGE,
GREELEY, COLORADO

DISCUSSION

SCHOOLS AND THE PUBLIC LIBRARY

THE first paragraph of the report on "Libraries in Education" by the Library Department of the National Education Association makes the following recommendation:

> All pupils in both elementary and secondary schools should have ready access to books to the end that they may be trained
>
> (a) to love to read that which is worth while;
>
> (*b*) to supplement their school studies by the use of books other than textbooks;
>
> (*c*) to use reference books easily and effectively;
>
> (*d*) to use intelligently both the school library and the public library.

This recommendation has apparently received the cordial endorsement of school administrators and school boards generally. Few new school buildings are now planned without adequate provision for a school library that will make it possible for pupils to "have ready access to books," and many buildings are being remodeled to supply this important phase of school work.

The establishment and conduct of a school library, however, is a highly technical task, not to be lightly undertaken by those without technical library training and experience. It is of particular importance that initial plans for the establishment of a school library receive the best possible technical advice, so as to insure a firm foundation upon which to build the major purposes of a school library. These major purposes, it seems to be generally agreed, are, briefly, two: (1.) To provide a book laboratory to reinforce the regular work of the school; (2.) To provide instruction and training in the use of the tools and resources of the public library as a means of continuing education when school days are over.

Fortunately such technical advice is now accessible to every school district desiring to establish a new library or to reorganize an existing library on modern lines to meet modern needs. A few state departments of public instruction have added to their staff a director of school libraries, whose business and pleasure it is to assist schools in making and carrying out plans for establishing a school library. The facilities of the American Library Association are also at the command of schools everywhere. Cooperation, however, between schools and the local public library is indispensable and invaluable to both schools and the public library. School libraries properly organized and administered will result inevitably in the progressive growth and development of our public libraries; and schools, on the other hand, require the services of the public library in order to realize fully their major purposes.

What are the services that the schools may properly and profitably require of the public library?

1. In their initial plans for establishing a library, schools need technical advice and help in the following matters: (a.) The distribution and design of the floor and wall space so as to insure maximum efficiency in the administration and use of the facilities of the library; (b.) selection of library furniture and equipment; (c.) choice of teacher-librarian.

2. A cooperative plan should be set up where possible for the training of apprentice teacher-librarians.

3. The technical routine of the school library should conform so far as feasible with that of the public library, so that pupils may use the facilities of either with equal ease. The public library should give whatever help and advice may be required and also furnish what it can from its stock of routine supplies and forms to make the two systems conform as nearly as possible.

4. The school library should have its own stock of books for general and collateral reading and for ready reference, but the public library should supply books of general reference used rarely or only seasonally. Pending also the building up of the school stock, the public library should supply books for general reading and frequent reference, to be placed on the shelves of the school library for extended periods.

5. In the selection and purchase of new books and in their preparation for the shelves, the public library can be of great help.

6. The public library can frequently lend supplies of pictures, clippings, and current

pamphlets which will greatly augment the resources of the school library.

In states that have a director of school libraries attached to the state department of public instruction, this official will naturally be the first one consulted by a school in regard to initial plans and standards, but a definite plan of cooperation between the school and the local public library should be worked out before final plans are fixed. Cooperation between schools and the local public library is indispensable to both and should be set up in definite, positive terms that permit of no misunderstanding and insure the maximum of benefit to all concerned.

JAMES N. RULE
DEPARTMENT OF PUBLIC INSTRUCTION,
STATE OF PENNSYLVANIA

EDUCATIONAL RESEARCH AND STATISTICS

THE SOUTH DAKOTA GROUP INTELLIGENCE TEST FOR HIGH SCHOOLS[1]

THE South Dakota Principals' Association last year conducted a cooperative study based on a group intelligence test given to the pupils in the high schools of the state. This test was made up of a battery of six separate tests as follows: (1) directions; (2) analogies; (3) synonym-antonym; (4) comprehension; (5) information; 6) mathematical ability.

The schools giving the test were requested to return the test sheets and report forms calling for specific information on the age of the pupils, the school classification, the average school grade of each pupil, his intelligence score, whether the pupil expected to attend a higher institution of learning, and whether he had decided upon an institution. Test sheets and report forms, more or less completely made out, were returned by 27 schools. The total number of students included in the reports was 1,453. According to classes the students were grouped as follows: seniors 304, juniors 366, sophomores 356, and freshmen 427.

It was found that in certain schools some classes were small while other classes in the same school were relatively large, and that it would be misleading to compare the schools as a whole. For example, the school with a senior class which is large in proportion to the size of the other classes would have a correspondingly high average intelligence grade. The averages for different classes were therefore calculated and were found to be as follows:

	Number	Average score	Average deviation
Seniors	304	58	10.7
Juniors	366	52	10.4
Sophomores	356	47	10.5
Freshmen	427	41	9.9

The highest average score made by the seniors of any school was 75. The juniors in two different schools made an average score of 62.5. The highest average sophomore score was 60.5. The highest average freshman score was 49. The lowest average made by any senior class was 43; the lowest junior average was 41; the lowest sophomore average, 38; and the lowest freshman average, 29.5. It thus appears that the difference between the highest and lowest senior averages is 32 points, between the highest and lowest junior averages 20 points, between the highest and lowest sophomore averages 22.5 points; between the highest and lowest freshmen averages 19.5 points.

These wide differences are in part due to the fact that some of the class groups were small and the element of chance selection functioned. For instance, the senior class that had an average of 75 was composed of three boys of superior ability, but this chance selection evidently did not explain the wide variation in scores when rather large groups were considered. It may be said that, since this test is an intelligence test and since general intelligence is supposed to be distributed somewhat widely, at least in a region as homogeneous as this state, it ought to show more uniformity. The particular test under discussion differs from most other tests of general intelligence in that it was prepared especially for high schools. The information test is made up of items taken from various fields which the high schools are

[1] Abstract of paper read before the Department of Secondary and Higher Education of South Dakota Education Association, November 22, 1921.

supposed to cover, such as history, literature, music, mathematics, science. The same is true of the analogy test and the synonym-antonym test. Again it may be said that the wide range is the result of unfair practice in giving the test. Without a doubt there is an element of error possible from this source, but, since the examination sheets were returned to me, any changes in the original markings could be noted and, if the malpractice was at all extensive, it could be detected by comparative methods. These data seem to indicate that the kind of work done in different high schools has a much wider range both in respect to quantity and to quality than is generally supposed.

TEACHER'S ESTIMATES COMPARED WITH INTELLIGENCE SCORES

A study of the grades given in different schools shows that, unless you know the average grade and the range for the school, the grade of any particular pupil means practically nothing. Some schools are graded uniformly high and others uniformly low. It would appear that certain local customs govern what grades shall be given. The freshman class whose intelligence score ranked highest had an average school grade of 84.5, and the freshman class which ranked lowest had a school average of 84.5. Thus the freshman class that had the lowest intelligence average and the freshman class that had the highest intelligence average had the same average standing according to school grade. This is not exceptional. The same thing held true to a considerable extent in comparing the other classes. The school that had the lowest intelligence average for the school as a whole, a score of 38.6, had an average school grade for all classes of 86.6. In contrast to this the school that had the highest intelligence average, a score of 58.6, had an average school grade of 86. The same contrast is noticed in respect to individual cases. Average school grades were received for nine of the 16 seniors who ranked highest making intelligence scores above 80. These nine seniors had the following average school grades: 94, 94, 92, 92, 87, 87, 84, 84, 76. According to the school grades, four of these students were high grade, four of them were average, and one was inferior. The student that obtained the highest intelligence score, 86⅓, had an average school grade of 83.

In 11 of the 18 schools where data made the comparison possible, the senior who made the highest intelligence score did not receive the highest average school grade. This would mean that the student winning first honors on the basis of school grades would not be the student with most ability, if we can trust the intelligence scores. In one group of seniors I found that the student who made the highest school grade (92), and would therefore have been an honor student, had made an intelligence score of only 40.

It is recognized that one of the important functions of the school is to find students with high grade ability, so that society may have an opportunity to encourage them to prepare themselves by means of advanced training to render the greatest possible service to humanity. In this state some recognition has been taken of this fact by the board of regents of the state schools when they granted scholarships to honor students of high schools.

This study calls attention to another question that it is proper to raise at this place. If it is intended to grant honors to students of superior ability and to supplement these honors by financial aid, would it not be more logical to grant this aid to a certain number of the most able students in the state regardless of whether they come from a few schools or one or two from each school It is quite evident that some students of very mediocre ability are granted honors because there is no competition in the class, while very superior students in large classes in the larger schools receive no honors and consequently no financial aid from the state. To advocate an intelligence test as a basis of granting honors would perhaps seem to revert to the old entrance examination system, but the intelligence tests as they are now worked out are far removed propositions from the old entrance examination.

CLASSIFICATION OF PUPILS

The average school grade and the average intelligence score for classes do not to any extent aid in solving the problem of proper classification. The problem here is one of individuals. According to the scores for this

test a mark of 70 may be taken to be a high score. Of the 304 seniors, 64, or almost 22 per cent., made 70 or above. Thirty-one of 366 juniors, 17 of the 356 sophomores, and five of the 427 freshmen made a score of 70 or better. There is scarcely a doubt but that this group of 53 students could be advanced in classification and would then stand ahead of most of the class members with whom they are associated. It might be possible to include even a larger group for acceleration by reducing the standard to 65 or even 60 and then still be above the average for the senior class. It is perhaps a perfectly safe assumption that the five freshman students who made an average of 70 or better would do a better grade of work in high school, both in respect to quality and quantity, in three years than the average student will do in four years.

The other side to this question is equally interesting, though not so encouraging. Scores below 30 may be taken to represent very inferior ability. Only seven seniors or 2.3 per cent. had scores this low. In the other classes, 16 juniors, 32 sophomores, and 78 freshmen received grades below 30. In checking the results it was observed that a number of students had made grades below 20. Why a high-school student cannot make a grade of at least that much, is difficult to see. It of course may mean in some cases that the student did not try. It may mean, as would seem to be indicated by the foreign spelling of the students' names, that some students have trouble with the English language. And again it may mean that some schools have exceedingly low standards for admission to high school. These low grade students are worthy of careful study. If their low grade is the result of a lack of ability then it is questionable if any useful purpose can be served by keeping them in school. In addition to being a detriment and an evil influence in school, these inferior children are an economic waste in that the state spends money on their education and gets nothing in return. If the time comes when it can be determined that a child has reached the limit of his capacity from an intellectual standpoint, then a compulsory school law that keeps that child in school will be a mistake. I say this being entirely cognizant of the fact that compulsory school laws do make allowances for extreme cases.

SEX DIFFERENCES

A number of the intelligence tests, the Army Alpha test in particular, have tended to show that girls make lower scores than boys, while at the same time their school grades are higher. In the case of some of these tests the reason for the boys making the higher score was apparent. Both the Army test and the Thorndike test contained elements that were especially concerned with activities of men or boys, but in devising this test an effort was made to avoid this difficulty without at the same time going to the other extreme.

The data collected show that, so far as school grades are concerned, the girls do rank higher. The senior boys obtained an average school grade of 84.2, the senior girls an average grade of 86.3; the junior boys had an average grade of 81.3, the junior girls an average grade of 85.9; the sophomore boys had an average grade of 82.4, the sophomore girls an average grade of 84.2; the freshman boys had an average grade of 81, and the freshman girls an average grade of 82. Without exception in each class the girls had the advantage of the boys in average school grades.

A comparison of the intelligence scores according to sex shows, on the contrary, that the senior boys had an average score of 65, the senior girls had an average score of 55; the junior boys had an average score of 54, the junior girls had an average score of 50; the sophomore boys had an average score of 52, the sophomore girls, 45; the freshman boys had an average score of 41, and the freshman girls practically the same score with only a very small fraction of a point difference.

It is possible that there is an element of sex development functioning to make this difference. The fact that there is practically no difference in the freshmen class and such a wide difference in the senior class is quite significant. When the boys and girls of the different classes are ranked in separate groups on a five point basis, that is, those falling in group 10-14, 15-19, 20-24, etc., the difference between them shows up quite clearly.

	Freshmen		Sophomores		Juniors		Seniors	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
10-14	3	1	....	1	....	....	....	....
15-19	7	9	1	....	2	....	....	....
20-24	6	13	2	12	....	2	1	1
25-29	18	22	1	15	2	12	1	2
30-34	23	40	5	19	8	18	1	9
35-39	24	37	12	34	3	15	2	12
40-44	25	45	16	33	13	27	7	17
45-49	27	27	12	39	21	34	3	21
50-54	16	28	25	29	23	36	6	45
55-59	6	17	12	24	20	26	12	29
60-64	8	11	11	11	19	24	14	24
65-69	4	6	14	11	15	15	14	20
70-74	1	1	8	4	10	9	14	16
75-79	....	1	2	....	4	6	10	7
80-84	....	1	2	1	1	1	12	3
85-89	....	....	....	....	....	....	1	....

THE KIND OF STUDENTS THAT GO TO COLLEGE

What kind of students are going to college or higher institutions of learning? Are they average, below average, or above average? These questions are of very great educational importance. It was thought advisable to try to get some information on this point. In answer to the question, "Will you attend a higher institution of learning?" affirmative replies were received from 46 senior boys and 99 senior girls. The average score of the 46 boys was 62.2 as against an average score of 66.2 for the whole group of senior boys. The average score for the 99 senior girls was 56, as against 55.2 as the average for the whole group. If these figures are of sufficient scope to be really indicative, it would appear that the gifted boys are not entering the higher institutions of learning in as large proportions as are the inferior or mediocre boys. The reports would seem to indicate that the girls going to higher institutions of learning have a slight advantage over those who stay out so far as ability is concerned.

It has been said that the boys of superior ability quite often quit school after they have finished high school, and sometimes before, because they want to get started in business or some field of work that seems to them to promise more than a higher education does. This may be a possible explanation for the condition indicated above by the scores of those who express an intention of going to college as contrasted with the whole group. On the other hand the girls do not have the same incentive to quit school, as in some cases it is a little too early to get married, and so they continue in school. There is another hypothesis as to this difference between the intelligence of boys and girls who enter college that might be worthy of consideration. In order for a girl to go to higher institutions of learning she must in most cases come from a home where the economic status is fairly prosperous. This in turn indicates that her parents have been able to meet successfully the economic competition. In other words they have ability to get on in the world. Her hereditary foundation is thus secure. It may be questioned whether the same rule holds to the same extent with boys. This carries back to high school because the girl whose parents have not had the ability to accumulate some material wealth will not express an intention of going to a higher institution of learning.

If it is true that, in this state or any other state, the best or most capable young men or a large proportion of them drop out of school at the end of the high school, the educational machinery of the state is failing to function as it should. One man gifted with high grade ability supplemented with the right kind of training is worth more to society than scores of men with mediocre ability and the training that can be grafted upon that ability. I do not mean to say that these talented young men will not make a success because they have not a higher education, but there is hardly need to argue that they would make a more complete success in life's work if they did have the advantages of better training.

SUMMARY

In summarizing the results of the study, the following conclusions would seem to be justified:

(1) The difference in the ability of pupils, by classes, from different schools is relatively large. The reasons for this difference are only to a limited extent indicated by the test itself. Among these may be mentioned lack of information, verbal knowledge, ability to comprehend, and number conception. Other contributing causes may be irregular attendance at school, poor teaching, poor school standards. The test indicates when the school has a high or low standing in comparison with others.

The adjustment, where adjustment is necessary, must be made within the school itself.

(2) The ability of a pupil can be determined only to a very limited extent by the school grades he receives. It would not be safe to make comparisons between pupils from different schools on this basis. Factors other than intelligence contribute very largely in determining grades of pupils.

(3) There are many superior pupils in the schools that have not been discovered at all by the schools. The pupil ranked highest in the school may not be the pupil of the greatest ability. On the other hand there are probably a number of very inferior pupils in the high schools that cannot get enough out of the school work to justify their retention in the school.

(4) The ability of the boys and girls in the freshman class is practically the same. In the other classes the boys are superior. There is a larger proportion of very superior boys and also of very inferior boys than of girls. The girls in all the classes seem to be better adjusted to the school program, according to school grades, than are the boys.

(5) The boys intending to attend higher institutions of learning do not rank as high as the average for the whole group of boys. With the girls, to a very limited extent, the opposite is true. Proportionately more superior than inferior girls will attend higher institutions of learning.

WILLIAM H. BATSON
UNIVERSITY OF SOUTH DAKOTA,
VERMILLION, SOUTH DAKOTA

A SYSTEM OF CONTROL OF PUBLIC SCHOOLS IN THE DISTRICT OF COLUMBIA[1]

THE system of control recommended for the public schools of the District of Columbia should embody the following features:

(1) *Fiscal independence:* The Board of Education should be given authority and responsibility to maintain and direct the schools, without interference from any source in the details of management, subject only to such legislative restrictions as would be analogous to the state legislation affecting the school system of a city of similar size located in one of the states.

(2) *Responsibility to the people:* Provision should be made for submitting to the people of the District of Columbia from time to time important proposals affecting the schools, and for securing definite expression of popular approval before certain kinds of action are taken. The Board of Education should be responsible to the people of the district and not to Congress. Congress may properly require reports of action taken, policies decided upon, etc., and should provide for audit of the board's finances.

(3) *Determination by the people of the district as to how they shall be taxed for the support of education:* The people, through their representatives, the Board of Education, should have the right to determine the rate at which they shall tax themselves for public education, within minimum and maximum limits set by Congress.

(4) *Federal participation in the general control and financial support of public education in the district:* (a) The principle of the joint responsibility of the Federal Government, with the citizens of the district, for general control and financial support of agencies for public education in the District of Columbia is regarded as incontestable.

(b) In both of these essential particulars, it is believed that the analogy between this relationship and that existing in the several states affords a basis for determining a sound method of legislative and administrative procedure.

(c) According to prevailing practice in the states, the state legislature assumes its share in the *general control* of education by enacting laws prescribing minimum standards which must be met, and setting up minimum conditions which must be complied with, but leaves the details of administration (such as the number and grades of teachers to be employed, salaries, buildings, equipment, etc.) to be determined by the local boards of education, in conformity with state laws. Similarly, the state legislature assumes its share in the *finan-*

[1] From a report submitted to Senator Arthur Capper, of Kansas, chairman of the Joint Congressional Committee on the District of Columbia, February 5, 1922.

cial support of the schools by providing a state distributable fund, or a flat sum per teacher employed, or per child of school age, or in some other way, but leaves the details of expenditures to the local boards of education, in conformity with certain general conditions prescribed by state law.

The state legislature, in other words, determines in general terms what ends are to be accomplished by public education in the state, and provides a share of the financial support needed, and then leaves it to the local boards of education to devise ways and means to achieve the ends in view.

(d) The principle here involved has been established in its application to the sphere of Federal Government activities by federal legislation and federal appropriations to the states, free from restrictions in regard to details, for the land-grant colleges, for vocational education, for industrial rehabilitation, for construction of good roads, and for other purposes.

(e) It is recommended, therefore, that Congress shall pass laws setting up in general terms the objects to be gained by public education in the District of Columbia, indicating general minimum standards and conditions which should prevail, and specifying the minimum and maximum limits within which the Board of Education shall have power to levy taxes for school purposes. Congress should not exercise control over details of school management or procedure.

(f) It is recommended, further, that Congress shall appropriate funds directly to the support of public education in the District of Columbia. These should be lump-sum appropriations, based on an ascertained and agreed-upon proportion of the per capita cost of the schools. Congress should not specify the objects of such appropriations in detail.

(5) *An appointive, non-salaried board of education, of nine lay members:* (a) Authorities on educational administration are not in complete agreement as to the best method of creating a board of education. The authorities consulted by the Bureau of Education seem to be agreed that, while election of members by popular vote may work satisfactorily under certain conditions, the plan does not work as well in cities of 200,000 population or over as some method of appointing. It is conceded that, generally speaking, the men and women who are best qualified for service on the board, will not, in a large city, offer to serve and make an active campaign for election. In the District of Columbia, all things considered, appointment by the President, subject to confirmation by the United States Senate, seems most likely to insure a regard for the wishes of the citizens and the maintenance of a high standard of personnel in the board.

(b) All authorities agree that the members of the Board of Education should not be professional educators connected with the school system, and that they should serve without compensation.

(c) In accordance with practice which has proved successful in many cities, it is suggested that the board consist of nine members, and that the term of office be three years, three members being appointed each year. The president should be given the power of removal from office for cause.

(6) *The superintendent of schools the expert adviser and chief executive officer of the board of education:* The chief functions of a board of education are deliberative, legislative, and inspectorial, not administrative. The Board should determine policies, and rely on educational experts whom it employs to carry them out. The system of control should definitely provide for recognition of the superintendent of schools as the expert adviser and chief executive officer of the board. No member of the board should exercise administrative functions.

I understand that this last-named principle (paragraph 6), relating to the functions of the superintendent of schools, is operative in the present plan of organization of the schools of the District of Columbia. I have included it here in order to summarize what I regard as the essential factors in the situation. If I am correctly informed, however, this is the only one of these basic principles which is actually functioning in this school system.

JOHN J. TIGERT
U. S. BUREAU OF EDUCATION,
WASHINGTON, D. C.